



# AR5000A & AR5000A+3

*2,000 memory channels, 40 search banks, 10 VFOs, 10 kHz - 3 GHz*

The AR5000A provides amazing sensitivity and strong signal handling across an unprecedented wide frequency coverage with all mode receive tunable down to 1Hz steps... all this in a compact cabinet weighing just 3.5kg. No wonder this receiver has been adopted as the definitive receiver for professional operators, top-end hobbyists, government departments and armed forces throughout the world. The short wave performance is so good that separate receivers need not be considered.

Whether sitting on the desktop monitoring short wave transmissions or connected to aerial farms for wide band VHF-UHF monitoring (via the optional AS5000 4-way aerial switch with automatic bandplan switching), operators have been astonished how the seemingly impossible has been achieved... unparalleled high performance, an amazingly flexible operating system, high build quality featuring a metal cabinet - yet still remaining very compact.

Multiple units have been interconnected at airports for communication monitoring, others have been ported via RS232 into dial-up or LAN monitoring applications. The receiver has even been combined with the optional spectrum display unit and located in distant concrete bunkers controlled via a laptop computer and dial-up connection. There is little competition for comparison, 'the rest of the pack' are significantly larger, heavier or many times more expensive!



☆☆☆☆ AR5000+3 awarded four stars by both the authoritative Passport To World Band Radio and World Radio & TV Handbook

True base receivers are few and far between, some have simply evolved from the hand held equivalents with little tangible improvement in performance or facilities over their smaller counterparts (or use switched wide band converters) - *the AR5000A is not like this!* AOR have been synonymous with pioneering receiver design from many years and this tradition continues with the AR5000A. A great advancement in wide band front end design has been made, partly due to the introduction of **automatic electronic preselection** between 500kHz - 999,999,999MHz with low pass, band pass and high pass filters for other bands. The preselection may be "manually tracked" when monitoring spot frequencies to help reduce any potential effects of interference caused by nearby monster transmitters, this results in excellent strong signal handling yet maintains high sensitivity.

A **TCXO** forms the building block which is fitted as standard to ensure a very high degree of stability, provision is made to feed the AR5000A from an external 10 MHz reference signal should one be available (commercial organisations etc). A **Numeric Controlled Oscillator (NCO)** provides smooth tuning with **steps right down to 1Hz**. The receive circuitry is a triple conversion superheterodyne with I.F.s of 622.0 / 622.4MHz, 10.7MHz & 455kHz. Multiple switchable I.F. bandwidths are available in both the 10.7MHz and 455kHz I.F. stages: 3kHz, 6kHz, 15kHz, 30kHz, 110kHz &

220kHz with provision for an optional 500Hz Collins mechanical filter, also a substitute 2.5kHz Collins mechanical SSB filter and Collins mechanical 5.5kHz narrow AM filter option is available.

The AR5000A is housed in a stylish custom **solid metal cabinet** and is powered from the supplied external 12V d.c. power unit but may be operated from any regulated supply or battery capable of providing 12-16V @ 1.0 Amps approx. Aerial input is via a high quality N-TYPE connector with a second SO239 connector which is switchable manually or automatically from the front panel. A switchable preamplifier is employed (below 230 MHz) plus a switchable 10dB attenuator, this may be configured as "auto" so that the receiver selects the optimum setting automatically.

Not only is the RF performance outstanding, the microprocessor facilities also point to the forward and innovative thinking which forms the core of the success. There are 1,000 memory channels, 10 scan banks, 20 search banks with **auto-memory store** and a total of **2100 PASS frequencies**, 5 independent VFOs, alpha-tag memory & search banks... TWICE, frequency offset, step adjust and auto-mode tuning and much more.

The 1,000 memory channels (10 banks x 100 channels), 20 search banks (TWICE) are stored by EEPROM so that no external supply, battery or capacitor is required for data retention.

## Evolution in Action





### Specification

Model	AR5000A / AR5000A+3	Sensitivity (uV)	
Frequency range	10kHz - 30MHz * * Not included in the USA for FCC rules	Receive Frequency	100KHz - 30MHz
Tuning	NCO 1Hz - 999.999999kHz AM, FM, USB, LSB & CW +3 includes Sync AM	100KHz - 30MHz	22.3
Modes	AM, FM, USB, LSB & CW +3 includes Sync AM	100KHz - 30MHz	2.23
IF frequencies	1st IF: 822.0 / 822.4 MHz 2nd IF: 10.7 MHz 3rd IF: 455 kHz	100KHz - 30MHz	1.54
Standard fitted filters	3kHz, 6kHz, 10kHz, 30kHz, 110kHz & 220kHz (provision for 500kHz option)	100KHz - 30MHz	0.89
Memory channels	1000 (100ch x 10 bank) TWICE	100KHz - 30MHz	0.75
Search banks	20 banks TWICE	100KHz - 30MHz	0.69
Memory scan speed	25 channels per second in standard mode, 45 channels per second (max) in Cyber Scan	100KHz - 30MHz	0.55
Search speed	25 increments per second in standard mode, 45 increments per second (with step size of 100kHz or less) in Cyber Scan	100KHz - 30MHz	0.47
PASS frequencies	2100 total TWICE (21 banks x 100 ch inc VFO)	100KHz - 30MHz	0.35
Priority	1 channel	100KHz - 30MHz	0.35
IF output	10.7 MHz with maximum x 5.5MHz bandwidth	100KHz - 30MHz	0.35
External reference	10.0 MHz input	100KHz - 30MHz	0.35
Operating temperature	0° to +50° C	100KHz - 30MHz	0.35
Frequency stability	± 2.5ppm (0° to +50° C)	100KHz - 30MHz	0.35
Aerial input	50 OHM unbalanced, N-TYPE & SO236	100KHz - 30MHz	0.35
Audio output (13.5V)	1.7 WATT into 8 OHMS @ 10% THD	100KHz - 30MHz	0.35
Power requirements	nominal 13.5V d.c. (12 - 18V) @ 1A approx with 1W audio output	100KHz - 30MHz	0.35
Size	217(W) x 100(H) x 260mm(D) mm approx excluding projections	100KHz - 30MHz	0.35
Weight	3.5kg	100KHz - 30MHz	0.35
Selectivity	1.5 dB filter bandwidth table:	100KHz - 30MHz	0.35

Filter kHz	Total pass (20dB down) kHz	Total skirt (40dB down) kHz
0.5 (500kHz) ops	0.5 - 0.5	2.0 - 4.0
2.5 ops	2.5 - 0.5	8.0 - 10.0
5	5.0 - 0.5	15.0 - 20.0
10 ops	10.0 - 0.5	30.0 - 40.0
15	15.0 - 0.5	45.0 - 60.0
20	20.0 - 0.5	60.0 - 80.0
30	30.0 - 0.5	90.0 - 120.0
45	45.0 - 0.5	135.0 - 180.0
60	60.0 - 0.5	180.0 - 240.0
100	100.0 - 0.5	300.0 - 400.0

Specification is typical but not guaranteed,  
subject to change due to continuous development  
of the receiver. E&OE. © AOR Ltd 2003

The original AR5000 provided frequency coverage to 2600MHz, the 'A' version has increased range  
to 3000MHz (3GHz), also squelch controlled audio on ACC1 for voice operated tape recorders.

### Key features

- Very wide frequency coverage 10kHz - 3GHz
- All mode reception: AM, FM, USB, LSB & CW
- Automatic electronic preselection of the front end
- Excellent strong signal handling
- NCO (Numeric Controlled Oscillator) with tuning steps down to 1Hz
- TCXO fitted as standard
- Multiple IF bandwidths 3kHz, 6kHz, 15kHz, 30kHz, 110kHz & 220kHz
- Auto mode bandplan selection
- Multi-function LCD with 8 character alpha-text comments
- Extensive search & scan facilities
- "Cyber Scan" fast search & scan speeds up to 45 channels / increments per second
- Analogue S-meter
- 1000 memory channels and 20 search banks with EEPROM storage - TWICE!
- Auto memory store
- Extensive RS232 command list
- Sleep timer / alarm
- SDU ready

In addition **EEPROM BANK SWITCHING** means that all the memory channels, search banks, pass frequencies and VFOs are PROVIDED TWICE (making a total of 2,000 memory channels, 40 search banks, 10 VFOs etc). This is an ideal situation when more than one operator is to use the equipment, each have their own "virtual" set. Scanning and search speed is a very respectable maximum of 45 channels or increments per second using "Cyber Scan" technology. A meaningful & detailed auto-mode bandplan has been preprogrammed (specific to each market area) so that operation is straight forward and quick. Should you wish, auto-mode may be easily cancelled by selecting a different step size or mode. A special **Frequency Offset facility** plus **step adjust** has been provided to simplify DUPLEX frequency monitoring and for tracking unusual band plans. A wide variety of search and scan types are available including memory scan, **select scan** (your temporary favourite frequency notepad!), mode scan, bank scan, pause scan, search bank link etc with channel edit facilities for changing memory contents. The squelch too may be configured for noise, signal level, audio level etc.

**Audio low pass and high pass filters** may be configured and are switchable around the following frequencies: LPF 3kHz, 4kHz, 6kHz & 12kHz, HPF 0.05kHz, 0.2kHz, 0.3kHz & 0.4kHz. De-emphasis is also selectable: THRU, 25uS, 50uS, 75uS & 750uS. A **DTMF decoder** is provided to display DTMF characters in use with an optional CTCSS board to display the CTCSS frequency.

A front panel accessory socket provides audio break-out / return for use with external signal processing units, detector output and switching control for tape recorders. The AR5000A has a switchable 10.7MHz I.F. output ready to plug straight into the optional spectrum display unit for "real time" band occupancy evaluation and measurements in both frequency and dBm signal level, finding those elusive transmissions has never been so easy. Extensive facilities are available via the **RS232 port** which is standard on the AR5000A. Even the volume and squelch controls may be remotely controlled. Output terminals are provided for an external speaker, headphones & transmit mute. Provision has been included for an optional built-in signalling unit, external aerial switching unit plus CTCSS and other decoder options.

A large rear illuminated segmented liquid crystal display provides a wealth of operating detail including frequency, mode, AGC, etc but also displays up to 8 alpha-numeric text characters so that comments may be entered to accompany memory channels & search banks to aid easy identification and retrieval of data. **Two tuning controls are provided:** the main knob provides tuning steps from 1Hz to 999.999kHz and has mechanical variable torque adjustment ideal for fine tuning such as SSB applications, the second is click-indented ideal for channel tuning and provides switchable step sizes of 100Hz, 1kHz, 10kHz, 100kHz, 1MHz and x10 for rapid tuning. An **analogue S-meter** provides easy to see relative signal strengths. Other useful facilities include a built-in dual time clock 12hr/24hr with On/Off timer, sleep and alarm, variable beep tone... **plus much, much more!** The English language operating manual comprises 77 A4 size pages with graphical key presses and lavishly illustrated LCD representations, a booklet containing the RS232 protocol listing is also supplied.

### AR5000A+3 - Sync AM, AFC, NB

The "+3" version offers even more with synchronous AM (upper side band, lower side band and double side band with excellent lock range), AFC (Automatic Frequency Control for accurately tracking moving transmissions or unusual band plans) and Noise Blanker.

The **SDU5600** is a new spectrum display unit ideally suited for locating and displaying those illusive transmissions.

The earlier SDU5500 and SDU5000 may also be used (V7 ROM required in SDU5000).



**Passport to World Band Radio '99** "Front-end selectivity, image rejection, IF rejection, weak-signal sensitivity, AGC threshold and frequency stability all superior". "Unlike virtually every other receiver we have tested over the past 21 years, the frequency readout is unfailingly accurate to the nearest Hertz. This should make the AR5000+3 of exceptional interest to broadcast engineers".

**World Radio TV Handbook '99** Speaking of the AR5000+3 in conclusion... "Compared with the ICOM ICR-8500 it offers considerably more features, better strong-signal handling, wider coverage and decidedly superior filters".



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